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Two New Species of *Cryptocarya* (Lauraceae) from Panama and Ecuador

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ABSTRACT. Two new species of *Cryptocarya* R. Br., *C. panamensis* P. L. R. Moraes & van der Werff, from Colón, Panama, and *C. yasuniensis* P. L. R. Moraes & van der Werff, from Napo, Ecuador, are described and illustrated. Additionally, the occurrence of *C. guianensis* Meisn. in Ecuador is here reported for the first time.

Key words: *Cryptocarya*, Ecuador, IUCN Red List, Lauraceae, Panama.

Cryptocarya R. Br. is one of the larger pantropical genera of the Lauraceae, present in South America, South Africa, Madagascar, Asia, Australia, and Oceania, with an estimated 350 species (van der Werff, 1992, 2008; Rohwer, 1993). The Brazilian species of *Cryptocarya* were recently revised by Moraes (2007), who recognized 13 species. Until the present, except for the Chilean species *C. alba* (Molina) Looser and the French Guianan *C. guianensis* Meisn., the American species of the genus were restricted to Brazil. *Cryptocarya* can be distinguished from other genera of the Lauraceae by its bisexual and trimerous flowers, which are very typical in shape (usually with a slender, urceolate, apically narrowed tube and the ovary immersed in the tube, six equal to subequal tepals, nine fertile stamens with disporangiate anthers, staminal glands only in the third androecial whorl), and by the characteristic fruit that is enclosed by the accrescent flower tube. During the preparation of the treatment of *Cryptocarya* from Brazil by the first author, several extra-Brazilian undescribed species were encountered, among them the Ecuadorian species presented below. An additional new species collected recently in Panama is also described in this contribution, and *C. guianensis* is reported for the first time from Ecuador. As stated by van der Werff and Richter (1996), our lack of knowledge of species numbers and distribution in the Lauraceae is related to the fact that many species are tall trees with small, inconspicuous flowers, difficult to locate and to collect. Flowers are still lacking for

several additional species of *Cryptocarya* from Bolivia, Costa Rica, Ecuador, Peru, and Venezuela, and thus these species remain undescribed until good flowering material is collected. It is worth mentioning that no specimen of *Cryptocarya* has been found among the Lauraceae collections at COAH and COL. Vegetatively, the fruiting specimens of *Cryptocarya* are unlike other Neotropical Lauraceae, and several had been identified in the field as Aquifoliaceae, Icacinaceae, and Nyctaginaceae.

NEW SPECIES OF *CRYPTOCARYA*

1. *Cryptocarya panamensis* P. L. R. Moraes & van der Werff, sp. nov. TYPE: Panama. Colón: Teck Cominco Petaquilla mining concession, forested slopes along ridge rd., 08°49'56"N, 80°41'05"W, ca. 250 m, 7 Mar. 2008 (fl.), G. McPherson 20456 (holotype, PMA; isotypes, MO, SPSF). Figure 1.

A *Cryptocarya moschata* Nees & Mart. et *C. subcorymbosa* Mez gemmis albedo- vel pallide flavo-pubescentibus, foliis juvenalibus super glabris, subtus glabrescentibus, foliis adultis ovatis, opacis, inflorescentiis minoribus (1.1–3 cm), florum tubo angustiore, glandulis (0.5–0.7 × ca. 0.6 mm) et staminodiis (0.7–1 × ca. 0.6 mm) majoribus recedit.

Trees, to 20 m; branches cylindrical, with lenticels; branchlets ca. 2.5 mm diam., ca. 5 cm below terminal bud, chestnut-brown to dark brown, angular at the tips, becoming terete toward the base of the branchlets, slightly rugose, glabrous, shiny, with lenticels toward the base; terminal buds minute, ovoid, pubescent, hairs white to light yellow, appressed, buds enclosed by concave scales, these glabrescent to ciliate. Petioles dark brown, 5–8 × ca. 1 mm, canaliculate above, rounded below, rugose, glabrous; leaves alternate, elliptic to ovate, 4.5–11.4 × 1.9–4.3 cm, chartaceous; young leaves glabrous adaxially, glabrescent abaxially, adult leaves glabrous on both surfaces, apex acute to short-acuminate, base acute to obtuse, margin flat, sclerified; both surfaces opaque and densely and prominulously reticulate,



Figure 1. Isotype of *Cryptocarya panamensis* P. L. R. Moraes & van der Werff (McPherson 20456, MO).

abaxially papillate; midrib prominulous adaxially, somewhat impressed to level near the base, prominulous to slightly convex abaxially; secondary veins patent (7 to 10 per side), prominulous on both surfaces; tertiary venation prominulously and densely

reticulate on both surfaces; venation pattern camptodromous-brochidodromous. Inflorescences axillary, paniculate, many-flowered, 1.1–3 cm, shorter than leaves, sparsely light yellowish pubescent, with mixed short and relatively long hairs, straight, appressed to

ascending; bracts and bracteoles minute, ovate, densely to sparsely tomentulose, ciliate, deciduous. Flowers yellow-green, with tube manifestly pubescent, tepals sparsely pubescent and glabrescent toward the apex, with relatively long hairs, these appressed to ascending, white to light yellow, 3.3(–4.5) mm long, 1.9(–3.7) mm diam. at apex; tube urceolate, 1.1(–2) mm long, 0.7(–1.2) mm diam.; tepals subequal, free to the base, ca. 2.4×1.3 mm, concave, ovate to obovate, apex acute to rounded, with inner surface densely covered with relatively long yellowish hairs, these appressed or ascending; stamens included; stamens of whorls I and II introrse, incurved, 1.2–1.6 mm, anthers sparse pilose, ciliate and papillate, ovate, $0.8\text{--}1 \times 0.4\text{--}0.6$ mm, connectives prolonged beyond the large sporangia, tip truncate, filaments pilose, stout, shorter than anthers, adnate to tepals; stamens of whorl III lateral-extrorse, incurved, 1.5–1.7 mm, anthers narrow-ovate, papillate and pilose, ca. 0.9 mm, connectives prolonged beyond the large sporangia, tip acute to truncate, filaments subequal to shorter than anthers, pilose; glands subglobose, $0.5\text{--}0.7 \times$ ca. 0.6 mm, pedicel 0.2–0.4 mm, sparsely covered by long yellowish ascending hairs, rather distant from the filaments; staminodes triangular-ovate, flattened, $0.7\text{--}1 \times$ ca. 0.6 mm, tip and abaxial side pilose, stalks conspicuous, ca. 0.4 mm, stout, pilose; gynoecium immersed in the tube, glabrous, 2.5–2.9 mm, ovary ellipsoid, ca. 1.2×0.6 mm, gradually merging into the style (ca. 1.4–1.7 mm) with small, discoid stigma. Fruits unknown.

IUCN Red List category. *Cryptocarya panamensis* is known only from the type collection and is assessed as Data Deficient (DD) according to IUCN Red List criteria (IUCN, 2001).

Discussion. The new species is morphologically similar to *Cryptocarya moschata* Nees & Mart. and *C. subcorymbosa* Mez, both from the Atlantic rainforest in southern Brazil. However, it differs from both mainly in the different indument covering the buds and inflorescences and by the distinctly shorter inflorescences (1.1–3 cm long). Its flowers are relatively smaller, with slenderer tubes, and with glands and staminodes larger than those of *C. moschata*, which reinforces the differences among the species. *Cryptocarya panamensis* resembles *C. aschersoniana* Mez in having young leaves adaxially glabrous and abaxially glabrescent; *C. aschersoniana* is restricted to southern Brazil and is distinct in other characters, for instance, the tertiary venation is immersed or very weakly raised while in *C. panamensis* it is prominulously raised on both surfaces. During a later visit to the type locality, G. McPherson tried to locate the sole known tree of this species, but he found that it had been cut

down. This is the first collection of a *Cryptocarya* species from Panama. The three collections known from Costa Rica, all with fruits, differ from *C. panamensis* in having the tertiary venation more coarsely reticulated and represent a different species.

2. *Cryptocarya yasuniensis* P. L. R. Moraes & van der Werff, sp. nov. TYPE: Ecuador. Napo: Estación Científica Yasuní, Río Tiputini, al NO de la confluencia con el Río Tivacuno, 6 km E de la carr. Maxus, Km 44, desvío hacia el pozo Tivacuno, $0^{\circ}38'S$, $76^{\circ}30'W$, 200–300 m, 28 Aug. 1996 (fl.), K. Romoleroux 2478 (holotype, QCA; isotype, MO). Figure 2.

A *Cryptocarya riedeliana* P. L. R. Moraes petiolis brevioribus (0.7–1.5 cm vs. 1.2–2.9 cm), canaliculatis vel profunde canaliculatis, foliis ovatis, majoribus ($12.5\text{--}20 \times 6.4\text{--}7.5$ cm vs. $6\text{--}17 \times 1.5\text{--}4.6$ cm), nervis secundariis subtus prominentibus, floribus majoribus ($3.6\text{--}5 \times 2\text{--}3.8$ mm vs. 3.3×4.2 mm), tepalis majoribus (ca. 3×1.8 mm vs. $1.7\text{--}2.4 \times$ ca. 1 mm), fructibus immaturis majoribus quam fructibus maturis *C. riedeliana* ($2.8\text{--}3 \times 2\text{--}2.9$ cm vs. $1.9\text{--}3.2 \times 1.3\text{--}2.5$ cm) recedit.

Trees, to 20 m; branches cylindrical, thick, brownish, relatively smooth, with lenticels; branchlets light brown to reddish brown, angular to terete toward the base, smooth, glabrous, somewhat shiny; terminal buds minute, enclosed by ovoid bracts, concave, glabrous. Petioles $0.7\text{--}1.5 \times$ ca. 0.2 cm, canaliculate to deeply canaliculate above, rounded below, smooth to rugose, glabrous; leaves alternate, ovate, $12.5\text{--}20 \times 6.4\text{--}7.5$ cm, coriaceous; adult leaves glabrous on both surfaces, apex acute to acuminate, base acute to obtuse, margin flat, sclerified; reticulation conspicuous on both surfaces, slightly paler abaxially, with papillae usually conspicuous; midrib slightly prominulous to impressed to level adaxially, prominent abaxially; secondary veins erect-patent (4 to 8 per side), prominulous adaxially, prominent abaxially; tertiary venation poorly to prominulously reticulate adaxially, prominulous abaxially; venation pattern camptodromous-brochidodromous. Inflorescences axillary to subterminal, paniculate, many-flowered, 2–6 cm, pubescent, with a mixture of short and long hairs, straight, ascending to erect, yellowish, shorter than leaves; peduncles pubescent; bracts and bracteoles minute, ovate, acute, minutely tomentose, deciduous. Flowers cream, minutely pubescent, with relatively short hairs \pm ascending, 3.6–5 mm long, 2–3.8 mm diam. at apex; tube urceolate, ca. 1.6 mm long, $1.3\text{--}1.8$ mm diam.; tepals equal, ca. 3×1.8 mm, concave, ovate, apex obtuse to rounded, with inner surface densely covered by relatively long hairs, mixed appressed and ascending; stamens included; stamens of whorls I and II introrse, ca. 1.8 mm,

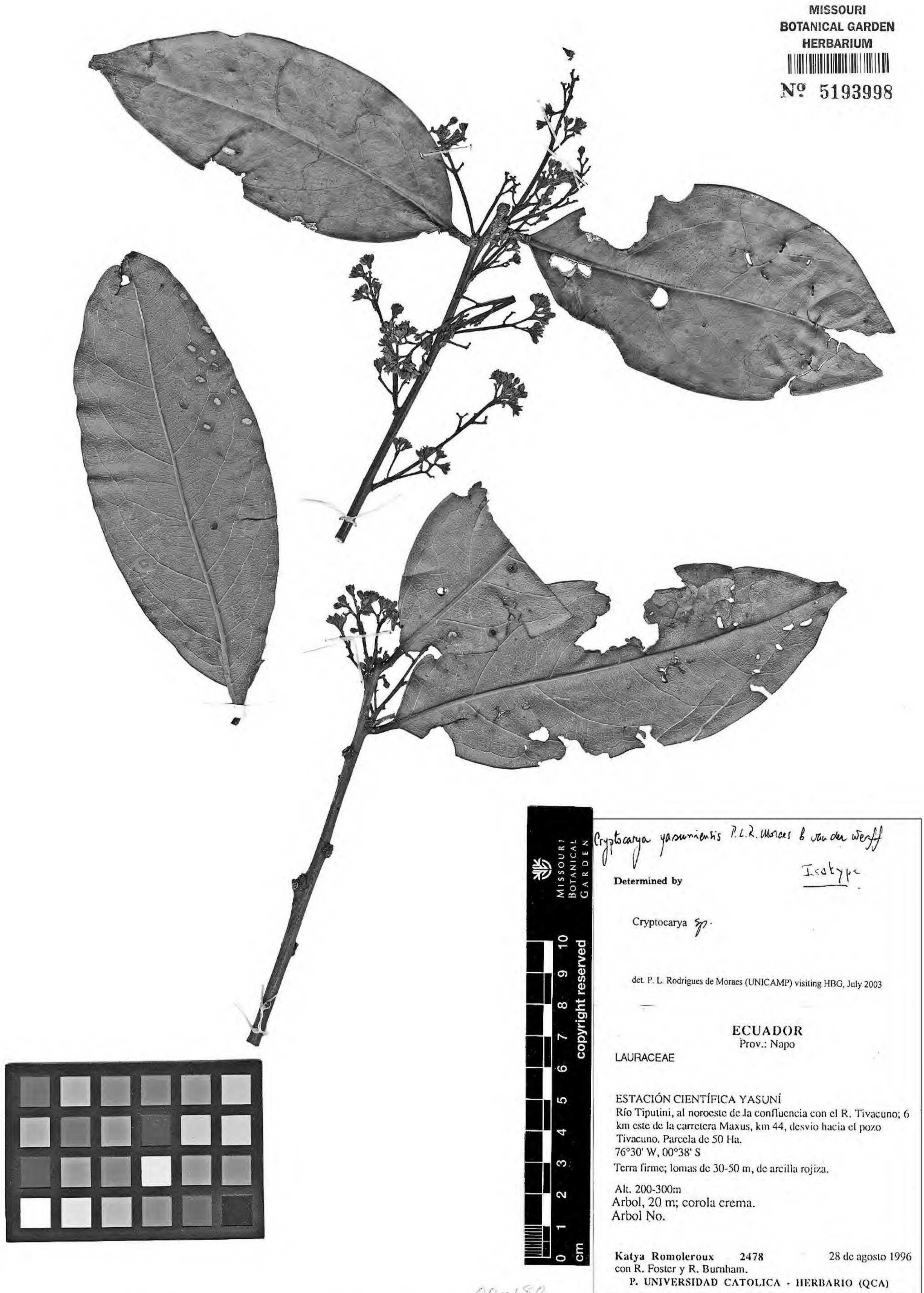


Figure 2. Isotype of *Cryptocarya yasuniensis* P. L. R. Moraes & van der Werff (Romoleroux 2478, MO).

anthers ciliate to pilose, triangular, ca. 1.2×0.7 mm, connectives prolonged beyond the large sporangia, tip obtuse to truncate, filaments pilose, shorter than anthers, adnate to tepals; stamens of whorl III lateral, erect, ca. 1.8 mm, anthers narrow-ovate, ciliate, ca.

0.8 mm, connectives prolonged ca. 0.3 mm beyond the large sporangia, tip truncate, filaments equal to slightly longer than anthers, pilose; glands subglobose, ca. 0.4×0.5 mm, pedicel ca. 0.4 mm, pilose; staminodes relatively large, sagittate, ca. 1×0.9 mm,